

# Lesson 3-8

## The Distributive Property

### Lesson Objective

To use the Distributive Property to simplify expressions in problem-solving situations

NAEP 2005 Strand: Number Properties and Operations

Topics: Number Sense; Number Operations

Local Standards: \_\_\_\_\_

### Key Concepts

#### The Distributive Property

##### Arithmetic

$$8 \times (4 + 6) = (8 \times \boxed{\phantom{00}}) + (8 \times \boxed{\phantom{00}})$$

$$7 \times (6 - 2) = (7 \times \boxed{\phantom{00}}) - (7 \times \boxed{\phantom{00}})$$

##### Algebra

$$a(b + c) = \boxed{\phantom{00}} + \boxed{\phantom{00}}$$

$$a(b - c) = \boxed{\phantom{00}} - \boxed{\phantom{00}}$$

### Example

- ① **Evaluating an Expression** Use the Distributive Property to simplify  $5 \times 47$ .

**What you think**

Think of 47 as  $40 + 7$ .

Then multiply by 5:  $5 \times 40 = \boxed{\phantom{00}}$  and  $5 \times 7 = \boxed{\phantom{00}}$ .

Now add the two products:  $\boxed{\phantom{00}} + \boxed{\phantom{00}} = \boxed{\phantom{00}}$ .

**Why it works**

$$5 \times 47 = 5 \times (\boxed{\phantom{00}} + \boxed{\phantom{00}})$$

← Write 47 as  $\boxed{\phantom{00}} + \boxed{\phantom{00}}$ .

$$= (5 \times 40) + (5 \times 7)$$

← Use the  $\boxed{\phantom{00}}$  Property.

$$= \boxed{\phantom{00}} + \boxed{\phantom{00}}$$

← Simplify within parentheses.

$$= \boxed{\phantom{00}}$$

← Add.

### Quick Check

1. Use the Distributive Property to simplify  $5 \times 68$ .

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**Example**

- ② **Money** A student bought 4 tickets that cost \$5.50. What was the total cost of the tickets?

$$\begin{aligned}
 4 \times 5.50 &= 4(\boxed{\phantom{00}} + \boxed{\phantom{00}}) &< \text{Write 5.5 as } \boxed{\phantom{00}} + \boxed{\phantom{00}}. \\
 &= (4 \times 5.00) + (4 \times 0.50) &< \text{Use the } \boxed{\phantom{00}} \text{ Property.} \\
 &= \boxed{\phantom{00}} + \boxed{\phantom{00}} &< \text{Simplify within parentheses.} \\
 &= \boxed{\phantom{00}} &< \text{Add.}
 \end{aligned}$$

The total cost was  $\boxed{\phantom{00}}$ .

**Quick Check**

2. A local bookstore charges \$2.80 for each used book. What is the charge for 5 used books?

## Homework Exercises

**Directions:** For #1-4, use the Distributive Property to multiply.

Show your work!	Comments/Corrections
(1) $7 \times 53$	
(2) $8 \times 97$	
(3) $5 \times 402$	
(4) The auditorium at the School for the Arts has 7 rows of seats, and each row has 102 seats in it. Use the Distributive Property to find the number of seats in the auditorium.  Multiplication Problem: _____	

**Directions:** For #5-7 use the Distributive Property to simplify each expression.

(5)

$$9 \times (5 + 3) \times 4 - 6$$

(6)

$$(8 + 7) \times 3 \times 2$$

(7)

$$6 \times (8 - 3) + 9 \times 4$$